

Abstract Of The Disclosure

[30] The invention relates to optical communications using techniques for providing efficient high speed polarization bit interleaving. One common architecture for high-speed time-division-multiplexing employs two modulators having a same bit rate, wherein two separately modulated streams of data bits are combined into a high-speed single serial stream of data bits, instead of providing a single higher-cost higher-speed modulator. The present invention has found with the availability of fast data modulators, that polarization bit interleaving can be employed more efficiently for higher speed data transmission in optical network systems by providing an optical modulator including a single data modulator, rather than multiplexing different data streams from different modulators. The present invention provides an optical modulator for encoding data on orthogonally polarized alternate light pulses comprising: means for modifying a laser light beam to a pulse train at a first frequency; a data modulator for encoding signal data on the pulse train at a second data stream frequency where the second frequency is greater than or equal to the first frequency; means for rotating a polarization state of at least alternate light pulses of the pulse train to provide a data stream of orthogonally polarized alternate light pulses.

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